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ABSTRACT

Attention of research and evaluation specialists has often focused on methodology for assessing program outcomes with less attention given to techniques for describing important characteristics of a program or methods for assessing the degree to which a program may faithfully reflect a particular model. The purposes of this paper are to describe a rationale for assessing the degree of program implementation, to identify some common misperceptions regarding program fidelity, and to discuss approaches used in assessing the degree of program implementation of a large-scale career education program called Experience-Based Career Education (EBCE). The authors' experiences in developing and using an EBCE Essential Characteristics Checklist and an EBCE Process Checklist in pilot sites in four states are described. Attention is also given to alternative uses of instruments that assess program implementation that can be made by program staff and by evaluators. (Author)

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ASSESSING THE LEVEL OF IMPLEMENTATION OF NEW PROGRAMS

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In the general educational program evaluation paradigm, the focus is on desirable educational outcome measures. These outcomes are then attributed to certain program design elements, although the linkages are rarely explicit. However, as Charters and Jones (1973) state,

> What is not standard practice in evaluation studies is to describe, let alone measure, how the programs in "experimental" and "control" situations actually differ from one another--or even to certify that they do. A serious consequence of slighting the alleged "independent variable" is that elaborately designed evaluation studies may sometimes end up appraising non-events, with no one the wiser. (p. 5)

Measurement of the independent variable in implementation studies is generally referred to as "degree of implementation" or "measurement of program fidelity." These concepts are useful in reviewing program or curriculum implementation efforts. It is not the purpose of this paper to review the literature on program implementation (see Fullan and Pomfret, 1975, and Paul, 1976, for reviews of implementation research). However, it is important to consider some defined features which may affect the implementation process.

Rogers and Shoemaker (1971) have identified five characteristics which may influence the implementation of innovations:

Relative Advantage: The degree to which the innovation is perceived as being better than the idea it supersedes.

Compatability: The degree to which the innovation is perceived as consistent with existing values, past experiences, and needs.

Complexity: The degree to which the innovation is perceived as relatively difficult to understand and use.

Trialability: The degree to which an innovation may be experimented with on a limited basis.

Observability: The degree to which the results of an innovation are visible to others.

These characteristics generally influence a decision to accept or reject an innovation. Once a decision to accept--or at least attempt to implement--an innovation has been made, it is important to measure the actual extent of implementation in order to permit causative statements about program effects. The literature is rich with examples of innovations which either have not been implemented to the degree intended, or have not been implemented at all in practice. By measuring what has actually been implemented, one can relate program outcomes to program features. Evaluation of this type corresponds to process evaluation in Stufflebeam's (1971) CIPP evaluation model, and to program implementation in Alkin's (1969) evaluation theory.

Methods of Measuring Degree of Implementation

Fullan and Pomfret (1975) have identified three elements often considered in developing a degree of implementation instrument: structure, behaviors and knowledge. Structural features include those changes in formal arrangements and physical conditions defined by the developer as necessary for program implementation--including special spatial arrangements, new staff or student roles, and basic organizational characteristics. Behavioral features include changes in the behavior or role interactions of all key actors, as identified by the developer. The final element, degree of knowledge about the objectives, content and philosophy of the implementation--will probably provide little implementation evaluation data

when used in isolation, since knowledge and behaviors are not always related.

When developing a degree of implementation instrument for the Individually Prescribed Instruction (IPI) mathematics program, Evans and Sheffler (1974) concentrated on structural and behavioral characteristics. However, they divided these characteristics into "instructional" and "organizational" categories.

Many different approaches have been used in measuring implementation. In summarizing their examination of many studies involving degree of implementation measurements, Fullan and Pomfret (1975) concluded that participant or instructor perceptions were inadequate means of assessing implementation. They further concluded questionnaire data and results of interviews with principals were of doubtful validity in assessing degree of implementation. Paul (1976) states:

> ...factors for describing effectiveness are difficult to measure. Studies of implementation which purport to measure change outcomes should be scrutinized to ascertain the method of measurement. Unless questionnaires have been validated with site visits and team observations, their reliability is doubtful. Observation using carefully constructed checklists which focus on behavioral changes in staff and students seems to be the most reliable method for measuring the extent of implementation. (p. 84)

Sheffler and Evans (1976) have identified some additional questions to consider in developing a degree of implementation instrument:

1. Who determines the items?
2. Who does the observing?
3. How are observers trained?
4. How many times a year should the checklist be used?

In a 1976 address, Gephart identified four classes of problems which impede the measurement of degree of implementation: the purpose problem, the local adaptability problem, the scalor problem and the innovation completion problem.

A problem arises if the purpose of the instrument is not considered during development, or if an already-developed instrument is applied in a new and different setting. The purpose for which the instrument is intended should determine its characteristics.

The second problem concerns the probability and acceptability of local adaptations of an innovation. A degree of implementation instrument should be flexible enough to measure acceptability. Gephart states, "The problem becomes one of defining anticipated, actual, and appropriate adaptation" (p. 7). Minimal standards and allowable variations should be noted by the measurement instrument.

Since most innovations are rather complex, information gathered by a degree of implementation instrument is difficult to summarize. The scalor problem involves attempting to get a single score which adequately represents all components of an innovation. Gephart suggests that a profile of scores considering each of the various components "would be a more logical way of summarizing implementation than a single score" (p. 8).

The innovation completion problem is somewhat related to the local adaptability problem. The transition from a functional, development-oriented setting into the user setting may expose gaps or weaknesses in an innovation which did not exist or were not relevant in the developmental setting. Some program weaknesses may at first go unnoticed because of an ideal setting at the developmental site, or local variation at the implementation site. The developer or local adopter can often "patch around" these weaknesses. The innovation completion problem may also be the result of the "indispensible person phenomena." That is, the personal interest and involvement of the developer is an important program component which is impossible to transport to a new setting. This factor is especially significant if the developer is extensively involved in the delivery of the innovation in the original setting.

Background and Problem

Certain misperceptions exist about implementation. First, there is the "teacher-proof system" myth (Gephart, 1976): the belief that innovations such as programs or materials can be so fully developed that they can be immediately implemented in different classrooms with teachers of varying capability, involvement and interest in the innovation. (Gephart, 1976) The "universal adoption myth," implies development of completely transportable and universally applicable innovations.

Both myths are related to the Research-Development-Diffusion (RDD) model developed by Clark and Guba (1972). The RDD model places responsibility for replication on the user, as though all components were totally acceptable. Of course, this is rarely the case, as evidenced by a later revision in the RDD model to reflect a configurational view (Guba and Clark, 1974).

Another misperception is the belief that the more faithful the replication effort to the original model, the more positive the outcome measures. This implies that the highest outcomes could be attained only by replications implemented in the same manner as the developmental or demonstration program against which degree of implementation is being measured. This theory does not allow for enhancement by the replication sites or for local adaptation.

Another misconception has been that continuous program fidelity should be encouraged, therefore, instrumentation need measure degree of implementation at only one point in time, without evaluating ongoing program changes. In reality programs usually change after initial adoption and it's useful to monitor changes in degree of implementation.

Rationale for Development of an Instrument to Measure Degree of Program Implementation

The foregoing discussion suggests many considerations important in developing a degree of program implementation instrument. The instrument should be capable of assessing to what degree each prespecified program component has been implemented. Evaluators must work closely with developers to identify essential program components, and determine the best indicators that these components are being utilized properly.

The instrument should be capable of generating a profile of program components, rather than a single score which attempts to capsulize the innovation. Profiles should allow for natural variation so that local sites can adapt or implement a program at different stages.

The instrument should also be able to measure program changes. Although most people realize that programs at replication sites evolve over time, few have considered that it is often impossible to adopt all features of a given program at the outset. Replication sites often initiate implementation with the most compatible, and easiest-to-implement components. Then, over time, components can be added or refined. This process affords replication sites immediate visibility with minimal local resistance to new procedures. However, unless the degree of implementation instrument is capable of measuring these fine differences, it may be difficult to gain an accurate picture of this gradual adoption strategy.

The degree of implementation instrument should be reliable, but easy to administer. An on-site checklist requiring both observation and records examination is recommended. The checklist should cover both structural and behavioral program features.

A final consideration concerns the use of data. In the authors' opinion, the belief that greater program fidelity will result in more positive student and program outcomes is fallacious. This myth assumes that the demonstration model being replicated is the ideal. In reality, no model is perfect; at best,

it is only a working guide based on procedures which were demonstrably effective in one or more pilot testing sites. Therefore, there can be no assurance that high fidelity implementation will yield any better results than those obtained from a less faithful site. What can be hypothesized, however, is that high fidelity implementation will yield student and program outcomes more consistent with those obtained in the prototype site(s). In addition, high fidelity implementation permits examination of relationships between particular program components and various student and program outcomes.

Development of Degree of Implementation Measures for an Experience Based Career Education Program

This section will begin with a brief description of Experience-Based Career Education (EBCE) and the Northwest Regional Educational Laboratory's (NWREL) demonstration project in Tigard, Oregon--Community Experiences for Career Education, or $(CE)_2$. It will then cover the development of two degree of implementation instruments used with $(CE)_2$ and its replication sites, focusing on how results from those measures have been used.

EBCE

Experience-Based Career Education (EBCE) is a fundamentally different type of education for secondary students. While students in traditional high school programs attend classes all day, EBCE students spend a major portion of their time on learning projects in the community. EBCE activities are tailored to individual needs, abilities, learning styles and goals, and students are guided in their learning by working adults in the community.

Through their interactions with community members, EBCE students learn about careers, about life, about other people, about themselves. They learn basic skills of critical thinking, science, personal and social development, functional citizenship and creative development. They gain competence in the skills adults need to function effectively in a technological society. They learn responsibility by helping design their own learning activities, and by following a set of accountability standards that parallel those standards working adults are expected to maintain on the job.

Perhaps most important, EBCE students learn how to learn: how to plan learning activities, how to find and use community resources, and how to build on

experience. They begin to see learning as a lifelong process with rewards directly related to each individual's personal goals.

The $(CE)_2$ Program

Since the fall of 1972, a model EBCE program funded by the National Institute of Education (NIE) and sponsored by the Northwest Regional Educational Laboratory (NWREL), has been operating in Tigard, Oregon.* The Tigard version of EBCE is a full-time educational alternative for high school juniors and seniors. The program serves about 10 percent of the eligible student body at Tigard High School.

The majority of student learning takes place at sites in the southwest Portland metropolitan area. When students are not pursuing community learning activities, their home base is the $(CE)_2$ learning center. Center staff are not teachers in the traditional sense, but facilitators of student learning, who help students design and follow individualized learning plans within a prescribed curriculum. Volunteers at community sites serve major support roles in student learning. Policies for $(CE)_2$ are determined by a board of directors composed of students, parents, employers, labor leaders and school district representatives. When students leave $(CE)_2$ they receive a unique portfolio displaying their program experiences and accomplishments; and upon completion of program requirements they receive a standard diploma from Tigard High School.

Pilot Sites

The NWREL EBCE program was developed and refined over a three-year period at the $(CE)_2$ demonstration site in Tigard, then tried out in four school districts in the Northwest. Each program was operated by the local district, with NWREL

*EBCE programs have also been developed, pilot tested and disseminated by the Appalachia Educational Laboratory, Inc., in Charleston, West Virginia; Far West Laboratory for Educational Research and Development in San Francisco, California; and Research for Better Schools, Inc. in Philadelphia, Pennsylvania.

providing training and technical assistance, and pilot sites paying for program operations. During the 1976-77 school year, pilot sites are operational in Colville, Washington; Hillsboro, Oregon; Jefferson County, Colorado; Kennewick, Washington; and Kodiak, Alaska.

EBCE Essential Characteristics Checklist*

Program developers and the evaluation staff felt that the essential characteristics of EBCE could be circumscribed within five descriptive components: 1) EBCE is an individualized program; 2) EBCE is community-based; 3) EBCE is experience-based, incorporating the daily activities of adults; 4) EBCE has its own identity and is comprehensive and integrated and 5) EBCE places major emphasis on students' career development. An Essential Characteristics Checklist was developed to measure the degree of implementation within each essential component area. Each component comprises four to six essential characteristics. These characteristics are rated on a scale of 1 to 5, with prespecified anchor points.

A background manual explains the purposes of the checklist, and describes special considerations for each essential characteristic. Anchor points have been set so that a 5 represents perfect program fidelity, while a 1 represents an antagonistic concept unacceptable within the framework of the NWREL EBCE model. Thus, a 2 would represent a highly questionable concept, a 3 a somewhat less questionable concept and a 4 an approximation of the intended concept, but still lacking perfect fidelity. Any rating below 4 indicates failure to implement an essential characteristic consistent with the NWREL-developed EBCE program.

During the past year, the Essential Characteristics Checklist was used in assessing the EBCE demonstration site (the original developmental site) and five pilot sites in the Northwest; results among sites were compared.

*Copies of this checklist can be obtained by writing the authors at NWREL, 710 S.W. Second Avenue, Portland, Oregon 97204.

During the present year we plan to utilize the Essential Characteristics Checklist at each of 22 sites implementing the NWREL EBCE program under implementation grants awarded through Part D of the Vocational Education Act.* This will allow us to prepare a useful profile of common implementation problems encountered by Part D sites across the country in their first year of operation.

EBCE Process Checklist

While the Essential Characteristics Checklist identifies basic policy and philosophical characteristics of an EBCE site, the Process Checklist is designed to identify variations in procedures used to operate an EBCE program. Both were developed using the five EBCE handbooks developed by NWREL as a reference point. This process checklist consists of four sections: 1) EBCE objectives, 2) management and organization processes, 3) curriculum and instruction processes and 4) student service processes. Each section contains separate items--all of which focus on processes used.

For example, while 13 competencies were originally identified as important survival skills for the Tigard $(CE)_2$ students (such as "maintaining a checkbook"), the handbooks encourage the use of staff discussion and community input in selecting competencies appropriate for a particular implementation site. Therefore, the primary purpose of the Process Checklist is to describe exactly what processes are being used at any particular implementation site.

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*These Part D EBCE sites are located in Evergreen, Alabama; Cordova, Alaska; Tucson, Arizona; Seacy, Arkansas; Denver, Lakewood, Eagle, Holyoke and Rocky Ford, Colorado; Newark, Delaware; Hilo, Hawaii; Pocatello, Idaho; Decatur, Illinois; Lexington, Kentucky; Pontiac, Michigan; Chesterfield, Missouri; Great Falls, Montana; Grand Island, Nebraska; Carson City, Nevada; Minot, North Dakota; Medford, Oregon; Philadelphia, Pennsylvania; Watertown, South Dakota; San Antonio, Texas; Manassas and Woodbridge, Virginia; Bellevue and Seattle, Washington; and Cheyenne, Glenrock, Lander and Laramie, Wyoming.

The Essential Characteristics Checklist and the Process Checklist were filled out independently at the beginning and end of the 1974-75 school year by the pilot site project directors and the NWREL evaluator. Results of the first checklist administration were used to direct project staffs' attention toward program implementation issues that may have been neglected in the haste of getting students started in program activities. The checklists also proved to be useful as a vehicle for defining Experience-Based Career Education, and as a congruency checklist for proposal developers seeking federal funds to implement an EBCE model.

Utilization of EBCE Checklist Results

The most obvious application of any degree of implementation instrument is in assessing program fidelity. However, the authors have identified additional uses for the essential characteristics and process checklists used with the NWREL EBCE program. First, these instruments afford the potential adopter a good orientation to the characteristics and processes of the EBCE program. In fact, NWREL EBCE Implementation Technical Assistance staff have found these instruments to be effective technical assistance devices.

These instruments are also valuable in establishing initial priorities. Implementation sites which cannot immediately adopt all processes and characteristics might use these instruments to focus their initial implementation efforts and guide future revisions. Moreover, the instruments can be used to assess initial implementation efforts, to pinpoint weaknesses and to set the stage for future implementation.

The instruments help stimulate discussions among site staff regarding program strengths and weaknesses. As a result of such discussion staff may formalize plans to revise or complete program implementation.

Finally, the instruments could be used to evaluate program changes during the course of a school year or over several years. NWREL EBCE evaluation staff have found this application useful in identifying areas of implementation which were incomplete at the beginning or middle of the year, but which had reached completion by the end of the year.

Conclusions

In this paper we have attempted to sketch the research literature on measuring degree of program implementation and have identified some common myths in this area. We then presented a rationale, description and uses for two measures designed to assess the degree of implementation of the NWREL Experience-Based Career Education Program. Later this year we plan to administer the two EBCE implementation instruments to the Part D, VEA sites in 23 states who are using the NWREL model of EBCE. Such data will provide the basis for an interesting analysis of the relationships among concept fidelity, process fidelity and outcomes. We recommend that other evaluators continue to examine the rationale for measures of program implementation and report new and varied uses for such measures.

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